

Notes on α - β pruning

Note Title

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$\alpha =$ best exact minimax value known for MAX, when starting at any node between current node and root, inclusive.

$\beta =$ best exact minimax value known for MIN, when starting at any node between current node and root, inclusive.

Let $v = \text{maxValue}(s, \alpha, \beta)$.

Then

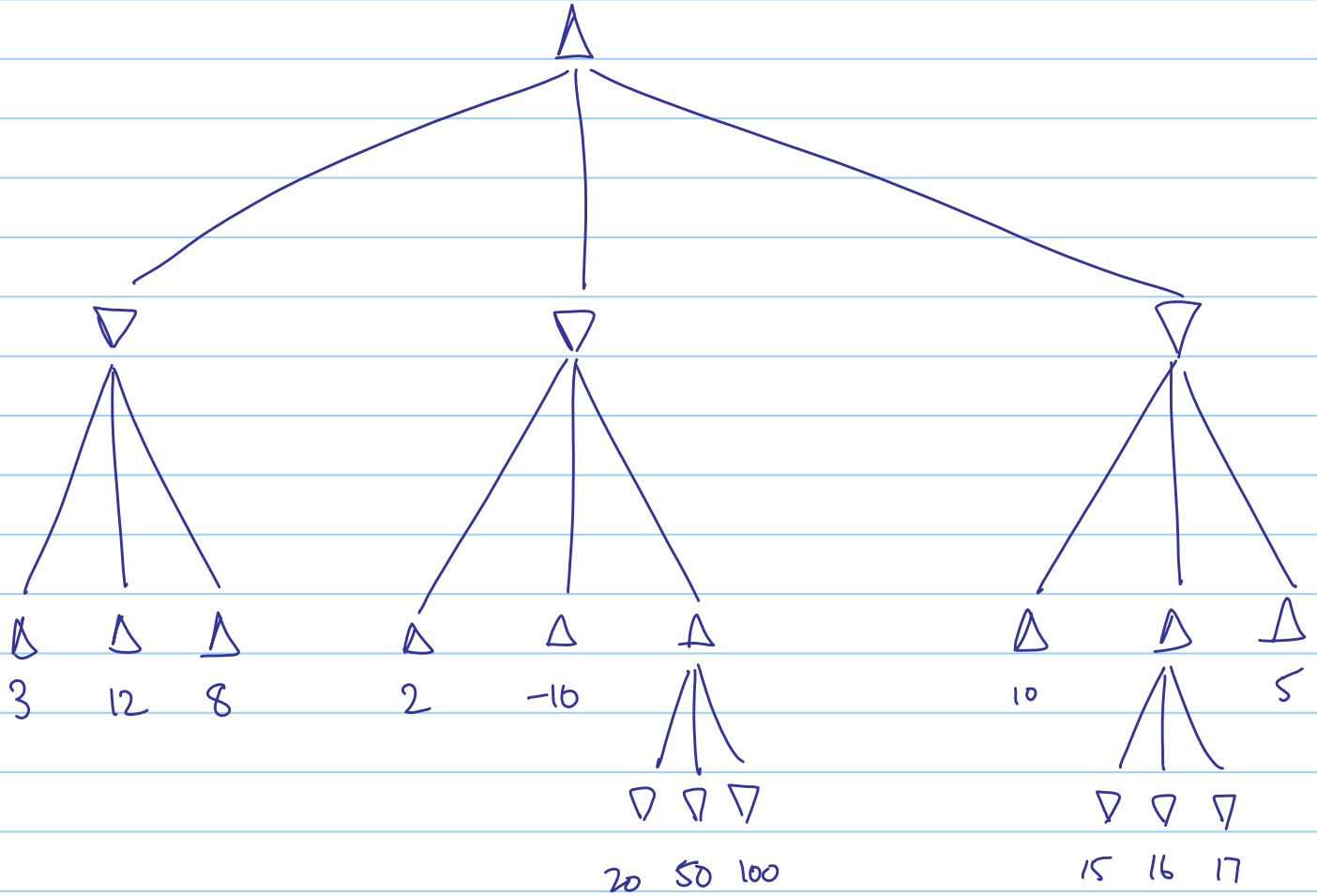
- If $v < \beta$, v is the exact minimax value of s
- If $v \geq \beta$, v is an underestimate of the minimax value of s
i.e. a lower bound

Let $v = \text{minValue}(s, \alpha, \beta)$.

Then

- If $v > \alpha$, v is the exact minimax value of s
- If $v \leq \alpha$, v is an overestimate of the minimax value of s
i.e. an upper bound.

Example



Work this out for yourself, using

- a) vanilla minimax
 - b) informal α - β
 - c) formal α - β .
- } as described in class